Research, Education, and Extension Work Together To Build Capacity for Sustainable Development

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Capacity building is a set of goals and processes that enable individuals, communities, and institutions to increase their ability to address sustainable development issues. Two important goals of capacity building are self-reliance and self-determination. Education, both formal and non-formal, is a process central to all capacity-building programs – it is the application of knowledge and skills that enables individuals to not only achieve their own goals but also contribute to their community and its institutions.

The United States Department of Agriculture (USDA), through its Cooperative State Research, Education, and Extension Service (CSREES), is a funding partner with 106 land-grant institutions that employ more than 9,500 scientists and 9,600 extension educators and engage nearly 3 million volunteers. This partnership is one of the largest and oldest enterprises that build capacity for sustainable development through formal and non-formal education programs based on the results of basic and applied research programs.

What Is a Land-Grant Institution?

A series of three congressional actions created the system that provides higher education (Morrill Acts of 1862 and 1890), agricultural research (Hatch Act of 1887), and extension or public service (Smith-Lever Act of 1914).

Together, these acts provide for the advanced education of individuals, scientific research to improve the quality of life of all Americans, and public service to "aid in the diffusion among the people of the United States useful and practical information on subjects related to agriculture..." (Smith-Lever Act of 1914). Through their participation in non-formal education programs, individuals expand their knowledge, develop new skills, and adopt sustainable agriculture and natural resources management practices.

Building the Capacity of Individuals

Individuals are unlikely to achieve life goals without lifelong learning. The development of technologies, the consumption of natural resources to support technologies, and the resulting human and environmental impacts are occurring at unprecedented levels. It is critical that individuals, and the communities and institutions to which they belong, engage in lifelong learning.

Sustainable Agriculture Research and Education (SARE). Since its establishment in 1988, this program has focused on increasing the knowledge and adoption of practices by farmers and ranchers that are economically viable, environmentally sound, and socially responsible. SARE producer grants support on-farm research collaborations between scientists and farm and ranch owners. The SARE Professional Development Program provides funding for sustainable agriculture education and outreach strategies for Cooperative Extension System (CES) agents, USDA Natural Resources Conservation Service (NRCS) staff, and others who work directly with farmers and ranchers. SARE's "Living Lab" and "Everyone a Teacher, Everyone a Learner" programs build capacity among agriculture and natural resources professionals for their work in sustainability projects.

Master Woodland Stewards. Sustainable forest resource management depends largely on the actions of individual private forest owners. Intensive, in-depth CES programs teach forest owners how to evaluate their forest resources, choose a course of action from an array of options, and implement on-the-ground practices. Many of these forest owners became community advocates for sustainable forestry and serve as coaches for friends, family, and neighbors who own forestland. Peer-to-peer teaching and learning make these programs unique.

Building the Capacity of Communities

Communities must address a wide variety of issues to deal with current stressors (e.g., economic conditions and natural disasters); plan for their future; and acquire/create the human, fiscal, political, and physical resources to achieve community goals. The Cooperative Extension System helps communities respond effectively to the complex environmental and social issues they face.

Rural-Urban Interfaces. As urban populations increase and people move to rural or semi-rural areas, conflicts arise. These result from the increased demands on water, air, forest, and open space and concerns about environmental degradation.

In some regions of the U.S., the migration of urban residents to rural areas has resulted in increased risks of wildfire and resulting loss of property and life. CES agents have worked with local agricultural producers to graze sheep in pre-determined areas to create fuel breaks. This protects communities from the devastation of wildfire while providing grazing lands to producers.

The Cooperative Extension System often assists communities in dealing with other disasters such as floods, droughts, and hurricanes. In one state, Extension coordinated a statewide hay lift that resulted in the delivery of 18 million pounds of hay to livestock producers suffering from severe drought. In another state, Extension assisted farmers in completing emergency loan applications and worked with farm families in need of financial planning and management information.

Community Development. Community services, infrastructure, local leadership, and engaged citizens are important assets to communities seeking to direct their future. A community health planning resource team from a land-grant university met with key leaders in 15 communities in one state to help them avoid losing their rural hospitals.

In another state, Extension helped a county with an insufficient tax base to meet community needs by establishing a community foundation that received grants for more than $1 million to support human services, youth programs, education, cultural enrichment, citizenship, and the environment.

Through a program in one Midwestern state, Extension helped 1,200 families save $175,000 by growing their own food in community gardens. Local food pantries received $50,000 worth of food from the harvest.

Building the Capacity of Institutions

Institutions of higher education play a critical role in sustainable development. They provide baccalaureate and graduate education for agricultural producers, natural resources professionals, and community leaders.

CSREES provides various kinds of financial support to a wide range of institutions of higher education in all U.S. state and territories.

An array of grant programs enables institutions to recruit and retain students, prepare and support faculty, and enhance teaching systems (e.g., library resources, scientific instrumentation, and curricula design and delivery systems). Competitive research grants support both scientists and graduate students in their pursuit of new knowledge and methods for transferring it to end users.

Undergraduate research projects provide opportunities for students to make scientific contributions while working with university scientists.

Targeted programs focus on historically black 1890 land-grant institutions; Tuskegee University; Hispanic-, Alaskan Native-, and Native Hawaiian-serving institutions; and 1994 tribal colleges.

Teaching Teachers and Mentoring Students. In addition to providing education for those students who enroll in agriculture and natural resources programs at land-grant universities, it is essential to reach high school students who may not be aware of opportunities in the food, fiber, and agricultural sciences.

Many land-grant universities reach out to elementary and secondary schools and provide mentoring, career discovery, internships, and technology training to both teachers and students.

Teaching and Learning in the Global Community. Students and faculty participate in numerous and varied internships and special study opportunities to help them succeed in today's global society.

International experience for agriculture students is common at many land-grant universities. Special projects in conjunction with various agencies of the U.S. government have involved faculty from numerous land-grant institutions.

More than 175 university scientists have participated in the Marketing Assistance Program in Armenia. Faculty from 31 land-grant universities assisted Poland's Ministry of Agriculture through a successful transition to become a more responsive, community-focused organization. During this 6-year project, capacity for responsiveness and relevance was created and has been sustained beyond the project's termination.

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